

AMENDMENTS TO THE CLAIMS:

Please amend claims 1 and 4-21 and add newly written claims 22-24 as follows.

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A deformable mirror comprising:

a passive substrate layer having a reflective surface provided thereon;

a first layer of actively deformable material, said first layer having a thickness and
attached to the passive substrate layer, ~~that is operable to deform~~ for deforming the mirror as a
result of transverse expansion or contraction of the deformable material under the influence of a
field applied across ~~it~~ said thickness; and

~~and a linear~~ actuator coupled to one of said layers ~~that is operable to~~ for further deforming
the mirror.

2. (original) A deformable mirror according to claim 1, wherein the first layer of actively
deformable material is bonded to the passive substrate layer.

3. (original) A deformable mirror according to claim 1, comprising a second layer of
actively deformable material bonded to the first layer of actively deformable material.

4. (currently amended) A deformable mirror according to claim 1, comprising a plurality
of linear actuators, each of said actuators coupled to one of said layers.

5. (currently amended) A deformable mirror according to claim 4, wherein the linear actuators ~~are arranged to be operable to correct lower order Zernike modes.~~

6. (currently amended) A deformable mirror according to claim 1, wherein the first ~~and/or second layer or layers of actively deformable material is/are segmented and the segments are arranged to be operable to correct higher order Zernike modes.~~

7. (currently amended) A deformable mirror according to claim 1, wherein the first ~~and/or second layer or layers of actively deformable material comprise piezoelectric material and the field is an electric field.~~

8. (currently amended) A deformable mirror according to claim 1, wherein said linear actuator ~~or actuators are~~ is coupled directly to the passive substrate layer ~~by means of~~ through one ~~or more apertures in the first and/or second layer or layers of actively deformable material.~~

9. (currently amended) A deformable mirror according to claim 1, wherein the linear actuator ~~or actuators is~~ is comprised of one of magnetostrictive ~~or~~ and electrostrictive material.

10. (currently amended) A deformable mirror holder for a deformable mirror ~~and deformable mirror holder, comprising a deformable mirror according to claim 1, and wherein the holder comprises a body with a central aperture for receiving the deformable mirror, the central aperture being defined by a plurality of flexible beams, with each flexible beam having an end~~

shaped to provide a supporting surface and a flexible portion that connects an end of the beam's
end to the holder's body.

11. (currently amended) A deformable mirror ~~and deformable mirror holder~~ according to
claim 10, wherein the ends of the flexible beams are co-joined to form a unitary structure shaped
to provide a supporting surface.

12. (currently amended) A deformable mirror ~~and deformable mirror holder~~ according to
claim 10, wherein the ends of the beams lie in the plane of the body of the holder such that, in
use, the deformable mirror is received within the body of the holder.

13. (currently amended) A deformable mirror ~~and deformable mirror holder~~ according to
claim 10, wherein at least one beam is generally L-shaped such that one leg of the L-shape
provides the flexible portion and the other leg of the L-shape provides the supporting surface of
the end of the beam.

14. (currently amended) A deformable mirror ~~and deformable mirror holder~~ according to
claim 13, wherein the internal corner of the L-shaped beam has a shoulder that extends part of
the way along both legs of the L-shape.

15. (currently amended) A deformable mirror ~~and deformable mirror holder~~ according to
claim 10, wherein the plurality of flexible beams are arranged around the entire aperture.

16. (currently amended) A deformable mirror ~~and deformable mirror holder~~ according to claim 15, wherein the width of the beams is larger than the separation between beams.

17. (currently amended) A deformable mirror ~~and deformable mirror holder~~ according to claim 16, wherein the width of the beams is greater than four times the separation between beams.

18. (currently amended) A deformable mirror ~~and a deformable mirror holder~~ according to claim 13, wherein the peripheral edge of the deformable mirror is supported from below by one leg of the an L-shaped beam and is supported from the side by the other leg of the L-shaped beam.

19. (currently amended) A deformable mirror ~~and a deformable mirror holder~~ according to claim 14, wherein the peripheral edge of the deformable mirror is supported from below by one leg of the L-shaped beam and is supported from the side by an inwardly-facing side of the shoulder.

20. (currently amended) A method of correcting phase variations in a beam of electromagnetic radiation incident upon a deformable mirror according to claim 1, wherein the actuator ~~or actuators are~~ is moved to correct Zernike modes at or below a threshold order and the first ~~and/or second~~ layer ~~or layers~~ of actively deformable material ~~is/are~~ moved to correct Zernike modes above the threshold order.

21. (currently amended) A method according to claim 20, wherein the actuator or actuators ~~are~~is moved to correct the first and second order Zernike modes and the deformable ~~element~~material is moved to correct third and higher order Zernike modes.

22. (new) A deformable mirror according to claim 3, wherein the at least one of said first and second layers is segmented and the segments are arranged to correct higher order Zernike modes.

23. (new) A deformable mirror according to claim 22, wherein the linear actuator is coupled directly to the passive substrate layer by means of at least one aperture in the first and second layers.

24. (new) A method of correcting phase variations in a beam of electromagnetic radiation incident upon a deformable mirror according to claim 3, wherein the linear actuator is moved to correct Zernike modes at or below a threshold order and the layers of deformable material are arranged to correct Zernike modes above the threshold order.